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COMPLETE SPECIFICATION.

Process of Manufacturing Hard Alcoholic Soaps.

I, Dr. Richard Falck, of 6 Goepperstrasse, Breslau, Germany, Physician, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The process of washing the skin may be divided into two distinct phases. In the first, the water is rendered capable of wetting and penetrating the skin by the dissolved soap. The particles which constitute the dirt likewise become enveloped by the soapy solution and thus prepared for the second phase. This consists in the lathering process, brought about by the usual movements of the hands, and in the soap-bubbles, which constitute the lather, acting as carriers for the particles of dirt and lifting the latter out of the skin and thus removing them.

In washing with the ordinary soaps, both the above processes go on in a very superficial manner, so that thorough cleansing does not take place; in particular, the particles of dirt which lie deep in the skin are not removed, since the lathering process commences at once and the soap does not penetrate sufficiently into the skin.

The purpose of the present invention is to produce a product by the application of which particles of soap, undecomposed, can be introduced deeper and more quickly into the skin, and only after this has taken place, the lathering process be commenced, which process is thus completed in the depth of the skin, so that the more deeply lying particles of dirt are brought to the surface.

Research has shown that sufficient quantities of soap can only be introduced undecomposed into the skin when instead of an aqueous, a concentrated alcoholic soapy solution, containing at least 10 *per cent* soap, is introduced into the skin in contact with the air, so that the alcohol evaporates and the soap penetrates into the skin. When now the hands so treated are dipped into water, in the usual manner, and a lather thus made, a surprising cleansing effect is attained in the same time and in the same manner as with ordinary soap, whilst there is the advantage that by means of the alcohol any germs on the skin are killed.

This cleansing process can be conducted simply by dropping (for instance by means of a burette) a concentrated alcoholic potash soap solution on the skin and then producing a lather by means of water. Such method, however, would be too troublesome to find general application.

The attempt has therefore been made to produce a solid alcoholic soap possessing sufficient hardness and capable of transport, and furthermore presenting all the other characteristics of ordinary soap.

For certain purposes spirit has already been converted from the liquid into the solid aggregate condition by the addition of soap.

Thus, for example, a part of the so called "solid spirit", which, as is well known, is employed solely for burning and illuminating purposes, is prepared by converting spirit into a semi-solid, jellied mass by the addition of soap. The object in view here, however, is to obtain a product melting at as high a temperature as possible by the addition of a minimum quantity of soap. Of all

[*Price* 8*d.*]

known soaps, therefore, stearine soda soap is the only one which comes in question, and which in minimum quantities produces maximum effects of the nature mentioned. Thus the ordinary solid spirit to be found in the market contains from 3—5 *per cent* stearine soda soap. Stearine soap, however, of all soaps manufactured, is the one which possesses the smallest cleansing and lathering capacity and is therefore almost wholly useless for the purpose of the present invention.

In opodeldoc and in the solid soap-spirit as recommended by Von Vollbrecht ("Archiv fuer klinische Chirurgie", Vol. 61, Nr. 2), a semi-solid gelatinous product is also presented, having the feature that it melts in the warm hand, and being employed solely for medical and therapeutic purposes. Cleansing therewith is not proposed, nor is it possible, since these preparations contain too little soap and thus cannot bring about the processes necessary for thorough washing. Furthermore, being scarcely solid, they melt on hot days and are thus difficult to pack or transport.

In the manufacture of the transparent soaps of commerce, alcohol was formerly sometimes employed to produce the desired transparency. As however the alcohol was volatilised during the process of manufacture, or was subsequently distilled over, and thus was not intended to form any real constituent of the soap-mass, such soaps are in no wise related to the present invention.

With the aid of the adequate quantity of soap and spirit, already mentioned, I have succeeded in producing not merely semi-solid, jellied masses, but a really firm product of high melting point, resembling ordinary household soap in hardness and solidity. I have thus produced an alcoholic soap, which can be readily given the same shapes as ordinary soap, and can likewise be packed and transported.

For the purpose in view, those soda soaps which have a very high degree of saponification are the best suited. Such soaps possess the property of rendering large quantities of spirit solid, and of producing an intense lathering and cleansing effect. By merely increasing the amount of soap, however, the desired products can only be obtained if the percentage of water is taken into sufficient account. Anhydrous soaps can be dissolved only with difficulty in absolute alcohol. The products obtained then possess, it is true, the highest possible melting-point, but are not of suitable solidity, as spirit and soap are so slightly united, that by slight pressure the spirit can be expressed from the mass as from a sponge. It requires the addition of water to bring about an intimate combination; this can also be effected by the addition of potash soap. Potash soap, also called 'barrel soap', is soft and of salve-like consistency; it is used in the present case, to render the otherwise brittle mass homogeneous and impart to it the necessary binding properties, so that it will, upon pressure, give like wax, and not break or crumble If, however, a large amount of water, for instance from 10% upwards, is added to the mixture, the melting point and the firmness is correspondingly reduced, until solidification of the mass at ordinary temperatures is no longer possible.

Such an alcoholic soap may be prepared, for example, as follows:—

15 parts coconut soda soap (anhydrous),
5 parts water,
80 parts alcohol.

Such an alcoholic household soap can be handled and employed in the same way as ordinary soaps, whilst it enables the desired cleansing and disinfecting effects to be attained in the simplest manner possible.

If a cake of such soap, is employed with a little water—the hands or the soap being dipped for a moment in water—, the water and the mechanical movements made in washing cause a dissolving process, which results in gradual dissolution of the soap to form a concentrated alcoholic soapy solution. As the washing takes place in the air, the solution penetrates gradually into the skin, in the manner desired, and on the subsequent application of water the purposed rich lather and thorough cleansing is attained, such as cannot be equalled by the use of ordinary soap. Experiments have shown, that if the soap be applied for five minutes, the hands are completely sterilised.

By the addition of other disinfecting or mechanically acting media, the disinfectant and cleansing properties of the soap can be still further increased. If cresols and phenols are added, they are rendered more soluble and effective, by the soap, without the firmness of the product being influenced. Mechanically acting substances, such as powdered pumice-stone, or the like, are especially effective when added to the harder soaps containing a large percentage of soap, as these are particularly suited to absorb and retain the mechanical agents.

Owing to the high percentage of spirit in the soap, it is also possible to add such medicinally acting agents as hitherto, in consequence of their insolubility, or slight solubility, could not be used in aqueous or aqueous-alkaline liquids as additions to soaps, or only on a very limited scale. Such medicinal agents are: camphor, chloral hydrate, iodoform, iodine, *etc.* If the skin is moistened with water and then rubbed with a piece of soap containing medicaments such as the above, gradual dissolution of the soap takes place and the medicaments dissolved penetrate into the skin. This method of employing medicaments dissolved in spirit offers the particular advantages, that the medicaments can be added in limited, quantitative doses and introduced into the skin without loss. With the previous method of rubbing in alcoholic solutions, this has been impossible, as they flow off the hand and into the fabric employed and so are lost.

If the soap is triturated, or if it is treated in suitable manner before cooling, an ointment or plaster can be made from it, which without dissolving will penetrate into the skin and can be readily mixed both with medicinally active materials or with fats.

By reason of the high percentage of alcohol, the soap can also be readily perfumed and forms an excellent carrier for such perfume.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1:—Process of manufacturing a hard, alcoholic soap of high melting point and high cleansing and disinfecting properties, consisting in dissolving considerable quantities of solid soda soaps (corresponding to from 10—30% anhydrous soda soap) with a quantity of water in high percentage alcohol, substantially as set forth.

2:—Process of manufacturing a hard, alcoholic soap, consisting in dissolving considerable quantities of solid soda soaps with a quantity of water in high percentage alcohol, and adding disinfecting, perfuming, mechanically or medicinally acting agents, substantially as set forth.

3:—Process of manufacturing a hard, alcoholic soap, consisting in dissolving considerable quantities of solid soda soaps in high percentage alcohol, and adding potash soap, substantially as set forth.

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Agent for the Applicant

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